

Claims

1. A method for the regeneration of denox catalysts with reduced activity based on the accumulation of phosphorous and phosphorous compounds, characterized in that the catalysts are treated with a substantially aqueous solution of water-soluble, alkalinely reacting alkaline earth salts, ammonium hydroxide or alkalinely reacting ammonium salts or water-soluble organic amines with a pH between approximately 2 .5 and 5.5 and that excess alkali is neutralized by a subsequent treatment with inorganic or organic acids.
2. The method according to Claim 1, characterized in that alkaline earth hydroxides or water-soluble salts such as acetates, carbonates or oxalates, ammonium acetate, ammonium carbonate, ammonium oxalate or amines, in particular methylamine are used.
3. The method according to Claim 1 or 2, characterized in that after the alkali treatment a neutralization of the remaining alkali takes place by the formation of water-soluble salts of organic or inorganic acids, in particular by phosphoric acid, sulfuric acid or oxalic acid, citric acid, malonic acid, formic acid, acetic acid, tartaric acid, chloroacetic acid, benzene sulfonic acid or sulfanylic acid.
4. The method according to Claims 1 to 3, characterized in that anionic, cationic, amphoteric, non-ionic or zwitterionic surfactants are added to the alkaline treatment solution and also to the acidic treatment solution.

5. The method according to Claims 1 to 4, characterized in that surfactants are used in amounts of 0.01 to 0.1 wt.%.
6. The method according to Claims 1 to 5, characterized in that the treatment with the alkaline reaction solution takes place at temperatures from room temperature to 100°C.
7. The method according to Claims 1 to 6, characterized in that the catalyst is moved in the reaction solution during the exposure time and/or that the acidic or alkaline reaction solutions are maintained in movement.
8. The method according to Claims 1 to 7, characterized in that the catalyst is moved by lifting and/or the reaction solutions are maintained in movement by agitation or recirculation.
9. The method according to Claims 1 to 8, characterized in that a treatment with low-frequency oscillations or ultrasound additionally takes place in the reaction solution.
10. The method according to Claims 1 to 9, characterized in that the low-frequency oscillations are used with 20 to 1000 Hz and ultrasound with 10,000 to 100,000 Hz, preferably from approximately 20,000 to 50,000 Hz.
11. The method according to Claims 1 to 10, characterized in that the treatment with the alkaline reaction solution and the ultrasonic treatment are carried out successively in separate basins.

12. The method according to Claims 1 to 11, characterized in that the catalyst is subjected to a mechanical pretreatment in order to remove fine dust and/or to a pretreatment with water.

13. The method according to Claims 1 to 12, characterized in that after the treatment with the acidic solution the catalyst is washed with water and dried.

14. The method according to Claims 1 to 13, characterized in that a re-impregnation with water-soluble compounds of the activator elements is carried out, if necessary, after the drying.

15. A regenerated denox catalyst, characterized in that it was subjected to a method according to Claims 1 to 14.